

REMARKS

In response to the Office Action mailed July 22, 2004, Applicant respectfully requests reconsideration.

The Office Action objected to the title as being in conflict with co-pending application number 09/981,646, which has the same title. The Office Action states that one or both titles should be changed. In response to this objection, Applicant has changed the title of the present application to "ON-CHIP EMULATOR COMMUNICATION FOR DEBUGGING". Thus, the objection has been overcome and Applicant respectfully requests that the objection to the disclosure be withdrawn.

Applicant also notes that in one of the PTO-1449 Forms attached to the Office Action, the reference entitled "Power Debugger With USB Interface Available" was crossed out and not initialed by the Examiner. No explanation of this was presented in the Office Action. According to Applicant's records, a copy of this reference was submitted with the Information Disclosure Statement and therefore Applicant respectfully requests that the next Office Action in this application include the 1449 Form initialed by the Examiner to confirm consideration of the reference "Power Debugger With USB Interface Available".

Rejections Under 35 U.S.C. §102

Claims 1 - 4 were rejected under 35 U.S.C. §102(e) as being anticipated by Swoboda (U.S. Patent Application Publication No. US2002/0059541. Applicant respectfully traverses this rejection.

Swoboda is directed to automatic detection of connectivity between an emulator and a target device. FIG. 1 of Swoboda shows an emulation system including an emulation controller 12 connected to a target system 16 via a target cable (Swoboda [0081]). FIG. 2 illustrates the connections of an emulator such as shown in FIG. 1 and a plurality of target devices, in the diagram, integrated circuit chips. The connections illustrated in FIG. 2 also use cables (Swoboda [0082]).

In Swoboda, the emulation device is not placed on the integrated chip but connected to the integrated chip via cables (Swoboda [0081]), and is therefore a separate emulator unit. Swoboda includes an off-chip emulation device that provides on-chip debug facilities (Swoboda [0055]-[0060]). Swoboda also explains as chip integration levels increase, CPU clock rates are also increasing. Increased CPU clock rates result in on-chip subsystems to be operated at clock rates slower than the CPU clock. Therefore, a clear view of the CPU is unattainable under the on-chip subsystem method of operation (Swoboda [0016]).

By contrast, claim 1 recites a debugging system comprising a host computer system and a target device, said target device having an embedded digital processor on an integrated circuit chip, an on-chip emulation device coupled to said digital processor the on-chip emulation device being operable to control said digital processor and to collect information about the operation of said digital processor, the on-chip emulation device having a communication port operable to receive information from and emit information to the host computer system wherein said debugging system further comprises an interface on said integrated circuit chip having a first port connected to said communication port of said on-chip emulation device and a second port connected to a universal serial bus, said host computer system having a universal serial bus port connected to said universal serial bus wherein said host computer system comprises a proxy server program for managing the universal serial bus port to enable communication over said universal serial bus, and said host computer further comprises application software in use communicating with the proxy server program and hence via said universal serial bus, with the or each digital processor.

Contrary to the assertion in the Office Action, Swoboda does not teach or suggest the limitation of at least an on-chip emulation device coupled to said digital processor. Clearly, claim 1 distinguishes over Swoboda and is in allowable condition. Accordingly, Applicant respectfully requests that the rejection under 35 U.S.C. §102(e) with respect to claim 1 be withdrawn.

Claim 2 depends from claim 1 and is allowable for at least the same reasons.

Claim 3 recites a method of debugging an integrated circuit chip by communicating between application programs running on a host computer system and a device on said integrated

circuit chip, the chip comprising digital processing circuitry and on-chip emulation circuitry for communicating with and control of said digital processing circuitry, the on-chip emulation circuitry having a communications port for receiving information from said host computer system and for passing information to said host computer system, the integrated circuit chip further having an on-chip usb interface connected to a target usb port, and the host computer system having a host usb port, the method comprising: converting said host usb port to said target usb port; running a proxy server program on said host computer system, causing a said application program to connect to said proxy server program, whereby said proxy server program connects to said device on said chip via said host and target usb ports.

As discussed above in connection with claim 1, Swoboda does not teach or suggest digital processing circuitry and on-chip emulation circuitry for communicating with and control of said digital processing circuitry. Claim 3 clearly distinguishes over Swoboda and is in allowable condition. Accordingly, Applicant respectfully requests that the rejection of claim 3 under 35 U.S.C. §102(e) be withdrawn.

Claim 4 recites a method of operating an integrated circuit chip having digital processing circuitry and on-chip emulation circuitry for communicating with, and control of said digital processing circuitry, the on-chip emulation circuitry having a communications port for receiving information from a remote computer system and for passing information to said remote computer system, said integrated circuit chip further having an on-chip usb interface connected to a usb port, the method comprising converting said usb port to the usb port of a host computer, wherein said host computer is capable of Internet connection; running a proxy server process on said host computer; generating a remote procedure call in said chip; transferring said remote procedure call via said usb to said proxy server process; converting said remote procedure call to a socket call; and thereby communicating between said chip and the Internet.

As discussed above in connection with claim 1, Swoboda does not teach or suggest digital processing circuitry and on-chip emulation circuitry for communicating with and control of said digital processing circuitry. Clearly, claim 4 distinguishes over Swoboda and is in allowable condition. Accordingly, Applicant respectfully requests that the rejection of claim 4 under 35 U.S.C. §102(e) be withdrawn.

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Art Unit: 2113

CONCLUSION

A Notice of Allowance is respectfully requested. The Examiner is requested to call the undersigned at the telephone number listed below if this communication does not place the case in condition for allowance.

If this response is not considered timely filed and if a request for an extension of time is otherwise absent, Applicant hereby requests any necessary extension of time. If there is a fee occasioned by this response, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 23/2825.

Respectfully submitted,

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